

Notice of Allowability

Application No.

09/236,113

Examiner

Gregg Cantelmo

Applicant(s)

SHI ET AL.

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment Filed 1/16/04 and telephone interview 2/23/04.
2. ☒ The allowed claim(s) is/are 1-16 and 26-28.
3. ☒ The drawings filed on 25 January 1999 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/230,345.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date Feb 23, 2004.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Gregg Cantelmo
Patent Examiner
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DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Albert L. Ferro on February 23, 2004.

The application has been amended as follows:

- a. In claim 11, at line 7, insert -- resultant -- before "magnetic";
- b. In claim 26, at line 7, insert -- resultant -- before "magnetic";
- c. On page 1, at line 2, replace:

"This application is a Continuation-In-part of U.S. Application No. 09/230,354, now abandoned, which is a National Phase Application of PCT/GB97/01992"
with

-- This application is a Continuation-In-part of U.S. Application No. 09/230,354, filed January 24, 1999 now abandoned, which is a National Phase Application (371) of PCT/GB97/01992 filed July 24, 1997, which claims priority to United Kingdom patent application No. 9615548.6, filed July 24, 1996.--

Terminal Disclaimer

2. The terminal disclaimer filed on January 16, 2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. patent No. 6,413,387 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Allowable Subject Matter

3. Claims 1-16 and 26-28 are allowed.
4. The following is an examiner's statement of reasons for allowance:

With respect to claims 1-10, none of the prior art of record is considered to teach, suggest or render obvious the invention of claims 1-10.

Claims 1 (and dependent claims 2-9) and 10 are drawn to cathode arc sources comprising a cathode, anode, vacuum chamber, macroparticle filter and magnetic field generating means. Claim 10 further comprises a cathode station and arc striking means.

None of the prior art of record is considered to teach, suggest or render obvious the combination of features defined in both claims 1 and 10.

Semenyuk is held to be the closest prior art of record. Semenyuk discloses a cathode arc source comprising a cathode, anode, vacuum chamber and magnetic field generating means as has been previously presented and discussed in the prosecution of the instant application.

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Semenyuk does not teach of using a macroparticle filter.

While Fallabela discloses that macroparticle filters are known in the art, it would not have been obvious to modify Semenyuk to further include a macroparticle filter. Applicant's reasoning set forth on pages 9 and 10 of the amendment received September 2, 2003 (incorporated herein) provide convincing arguments as to why there is no motivation to modify the teachings of Semenyuk with a macroparticle filter.

Therefore claims 1-10 are allowed over the prior art of record.

With respect to claims 11-16 and 26-28, see item 10 of the office action mailed May 2, 2003, incorporated herein. Such reasons being applied to both each of claims 11 and 26, as well as their respective dependent claims, since both claims 11 and 26 claim a method of striking an arc in a vacuum chamber comprising: generating first, second and the resultant magnetic fields, wherein the resultant magnetic field has a direction substantially normal to a front surface of the target and a zero field strength at a position above the target and inside the chamber.

The method of Semenuk discloses generating first and second magnetic fields and a resultant magnetic field from the first and second magnetic fields. However there is no teaching or clear suggestion in Semenyuk to provide the resultant magnetic field has a direction substantially normal to a front surface of the target and a zero field strength at a position above the target and inside the chamber.

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Providing the zero field strength at a positive above the target and inside the chamber produces an arc having a diff use arc flame and reduced arc spot intensity.

Few "red flies" are observed in this arc, and the target is eroded evenly.

Therefore claims 11-16 and 26-28 are allowed over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (571) 272-1283. The examiner can normally be reached on Monday to Thursday from 9 a.m. to 6 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. FAXES received after 4 p.m. will not be processed until the following business day. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you

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have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregg Cantelmo
Patent Examiner
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A handwritten signature in cursive script, appearing to read "Gregg Cantelmo", with a long horizontal flourish extending to the right.

February 23, 2004